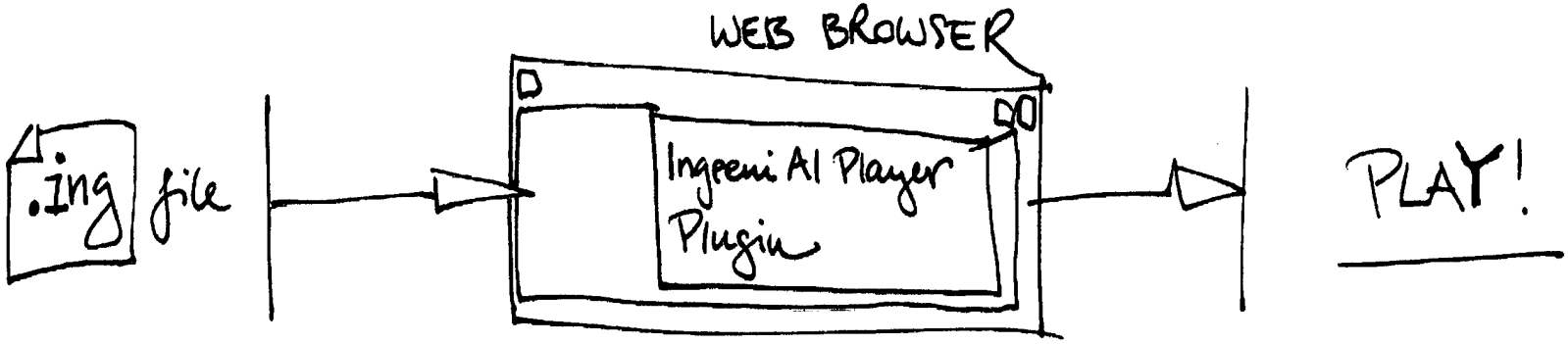


FIG. 1

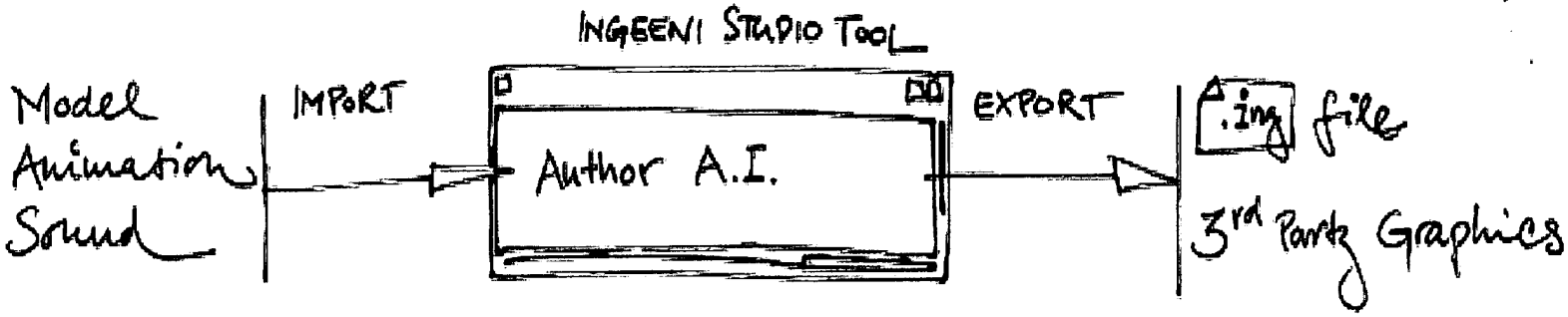

INGEENI STUDIO TOOL
Model
Animation
Sound
IMPORT
Author A.I.
EXPORT
.ing file
3rd Party Graphics

FIG. 2

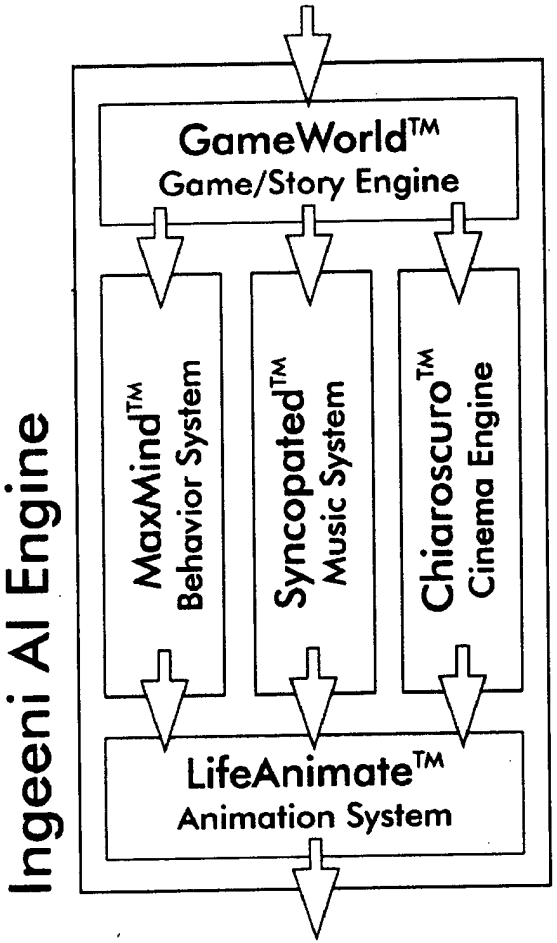

Ingeeni AI Engine
GameWorld™
Game/Story Engine
MaxMind™
Behavior System
Syncopated™
Music System
Chiaroscuro™
Cinema Engine
LifeAnimate™
Animation System

FIG. 3

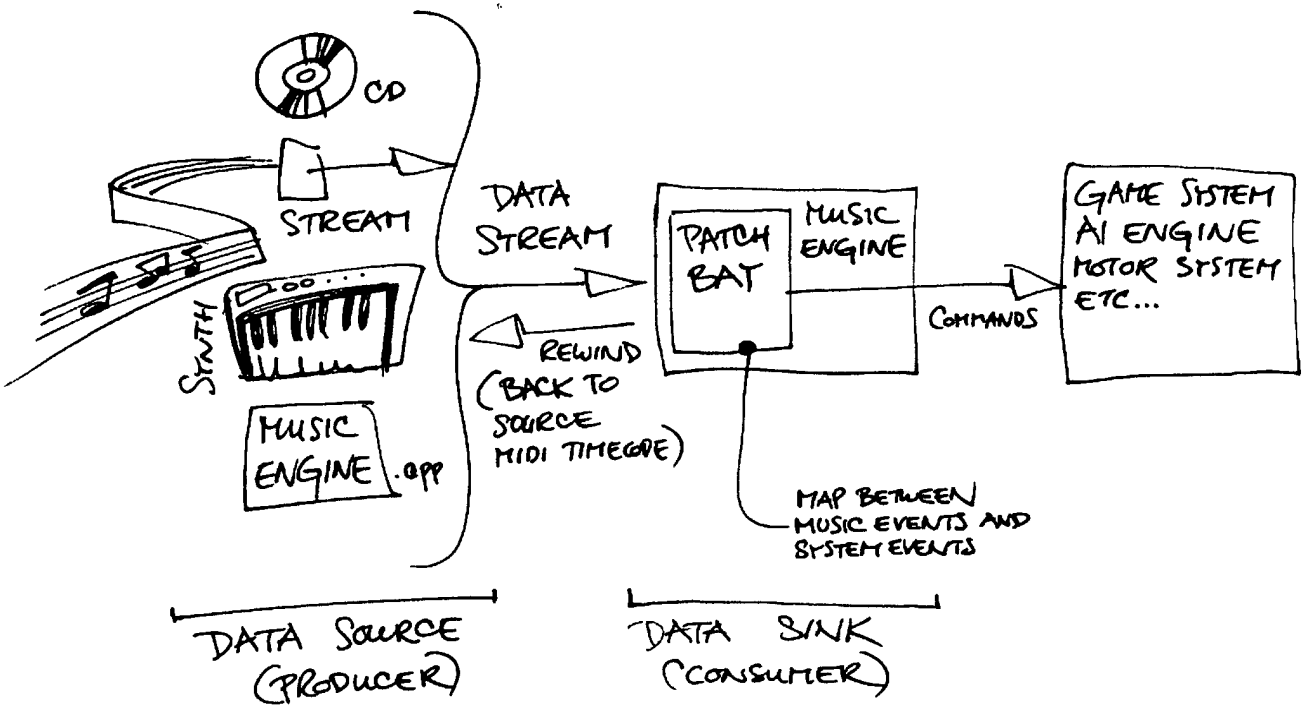

CD
STREAM
SYNTH
MUSIC ENGINE .app
DATA STREAM
REWIND (BACK TO SOURCE MIDI TIMEBASE)
PATCH BAY
MUSIC ENGINE
COMMANDS
GAME SYSTEM
AI ENGINE
MOTOR SYSTEM
ETC...
MAP BETWEEN MUSIC EVENTS AND SYSTEM EVENTS
DATA SOURCE (PRODUCER)
DATA SINK (CONSUMER)

FIG. 4

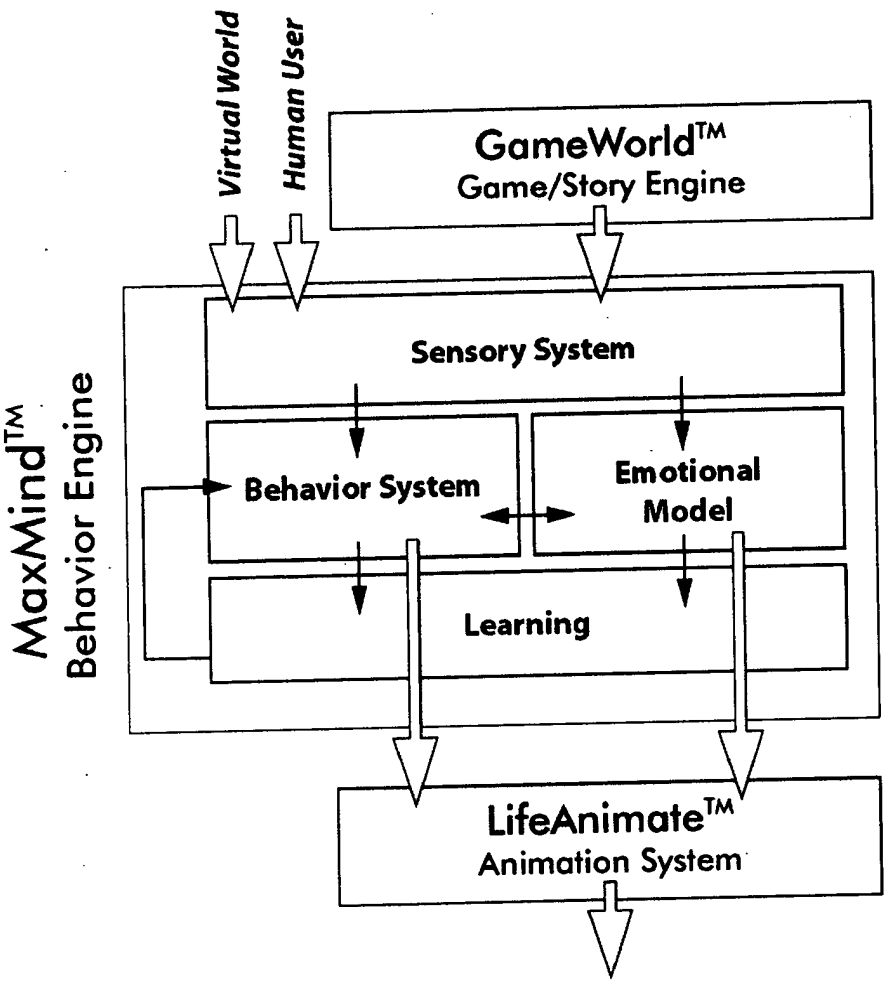

Virtual World
Human User
GameWorld™
Game/Story Engine
MaxMind™
Behavior Engine
Sensory System
Behavior System
Emotional Model
Learning
LifeAnimate™
Animation System

FIG. 5

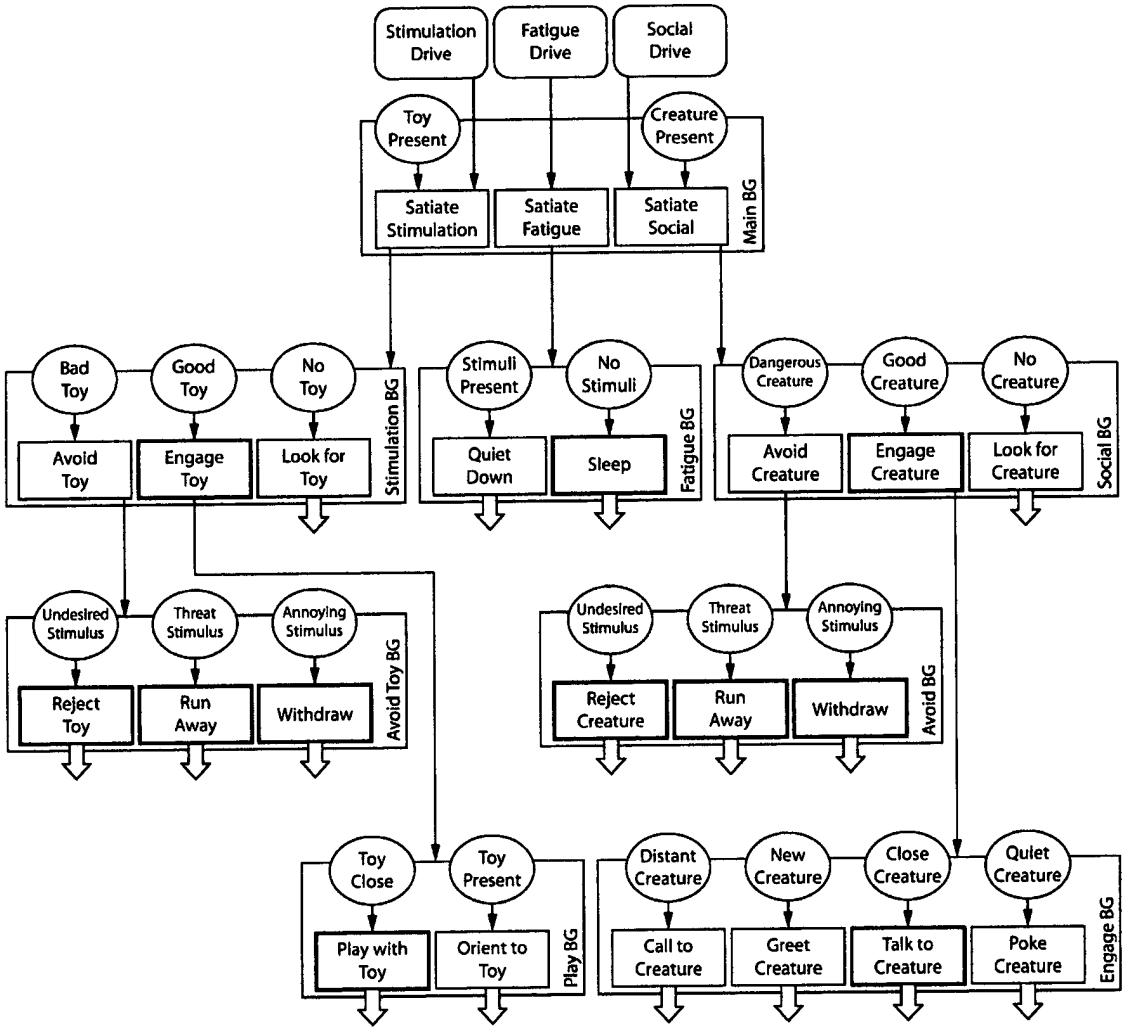

Stimulation Drive
Fatigue Drive
Social Drive
Toy Present
Creature Present
Satiate Stimulation
Satiate Fatigue
Satiate Social
Main BG
Bad Toy
Good Toy
No Toy
Avoid Toy
Engage Toy
Look for Toy
Stimulation BG
Stimuli Present
No Stimuli
Quiet Down
Sleep
Fatigue BG
Dangerous Creature
Good Creature
No Creature
Avoid Creature
Engage Creature
Look for Creature
Social BG
Undesired Stimulus
Threat Stimulus
Annoying Stimulus
Reject Toy
Run Away
Withdraw
Avoid Toy BG
Undesired Stimulus
Threat Stimulus
Annoying Stimulus
Reject Creature
Run Away
Withdraw
Avoid BG
Toy Close
Toy Present
Play with Toy
Orient to Toy
Play BG
Distant Creature
New Creature
Close Creature
Quiet Creature
Call to Creature
Greet Creature
Talk to Creature
Poke Creature
Engage BG

FIG. 6

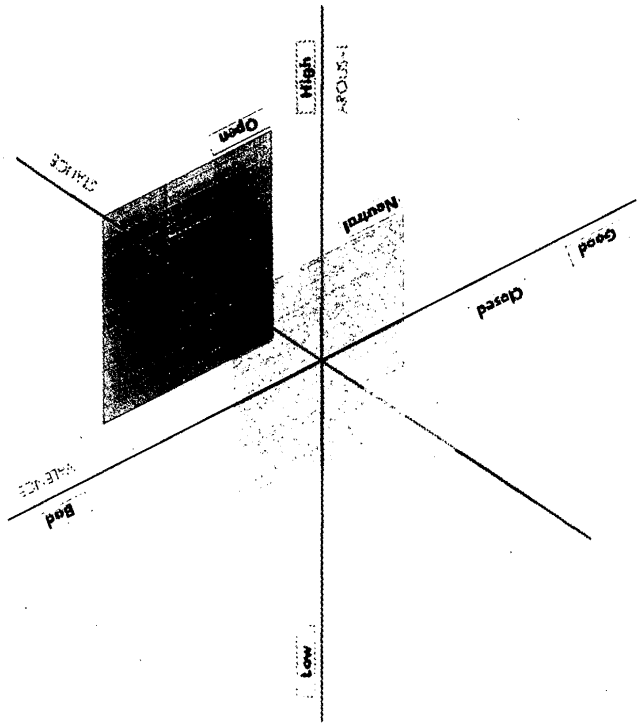
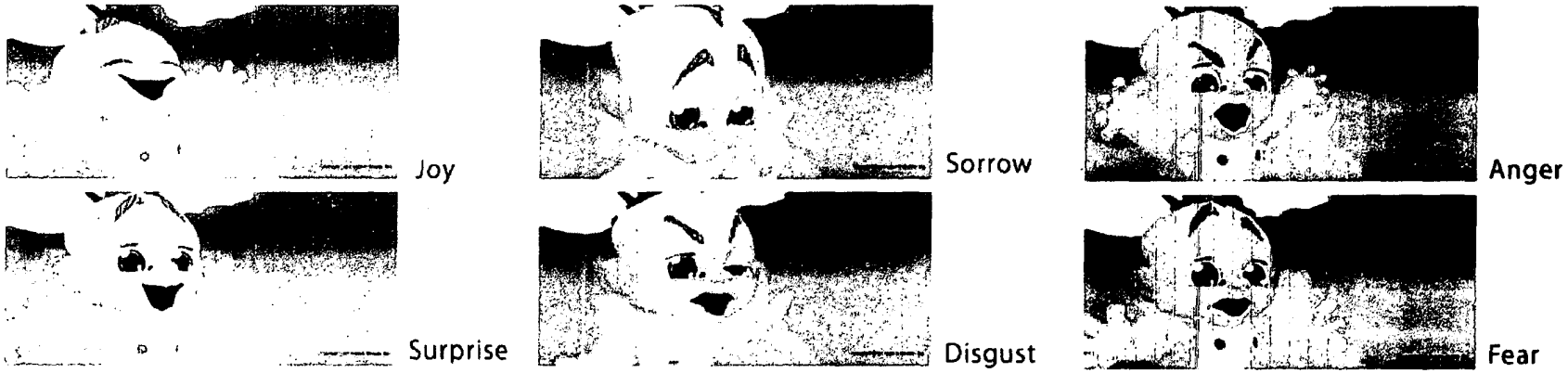


FIG. 7



Trigger condition	*Emotion*	*Resulting behavior*
Difficulty in achieving goal	Anger	Complain
Presence of an undesired stimulus	Disgust	Withdraw
Threatening, overwhelming stimulus	Fear	Escape
Success in achieving goal	Joy	Laugh, display pleasure
Prolonged absence of desired stimulus	Sorrow	Display sorrow
A sudden stimulus	Surprise	Startle response

FIG. 8

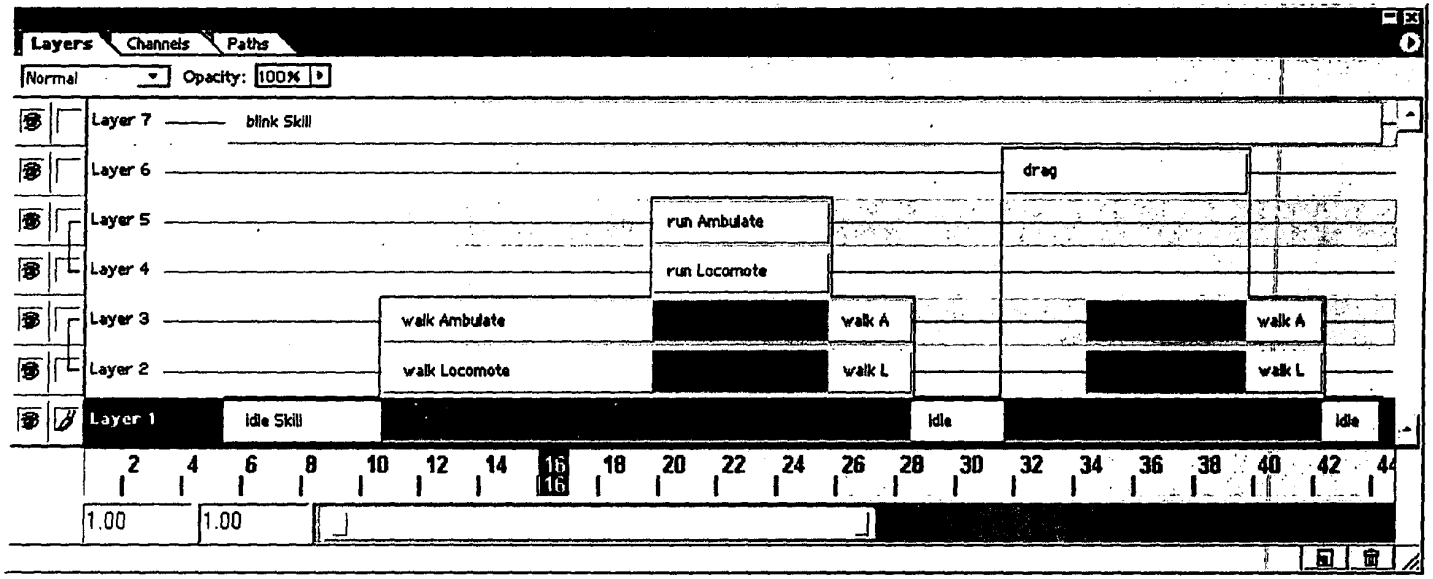

Layers
Channels
Paths
Normal
Opacity:
100%
Layer 7
blink Skill
Layer 6
drag
Layer 5
run Ambulate
Layer 4
run Locomote
Layer 3
walk Ambulate
walk A
walk A
Layer 2
walk Locomote
walk L
walk L
Layer 1
Idle Skill
Idle
Idle
2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42
1.00
1.00

FIG. 9

Image Composite (existing metaphor)	**Animation Composite**
Pixel	Animation channel, or animation curve, or Degree of Freedom (DOF), or a floating point number changing over time.
Layer	An animation, a collection of animation channels over time, a Skill.
Transparency	An animation in a layer can be sparse; it does not need to "touch" every channel. Empty animation channels correspond to transparent pixels.
Blend mode	Applies to animation data as well, determines the type and percentage contribution of each layer.

FIG. 10

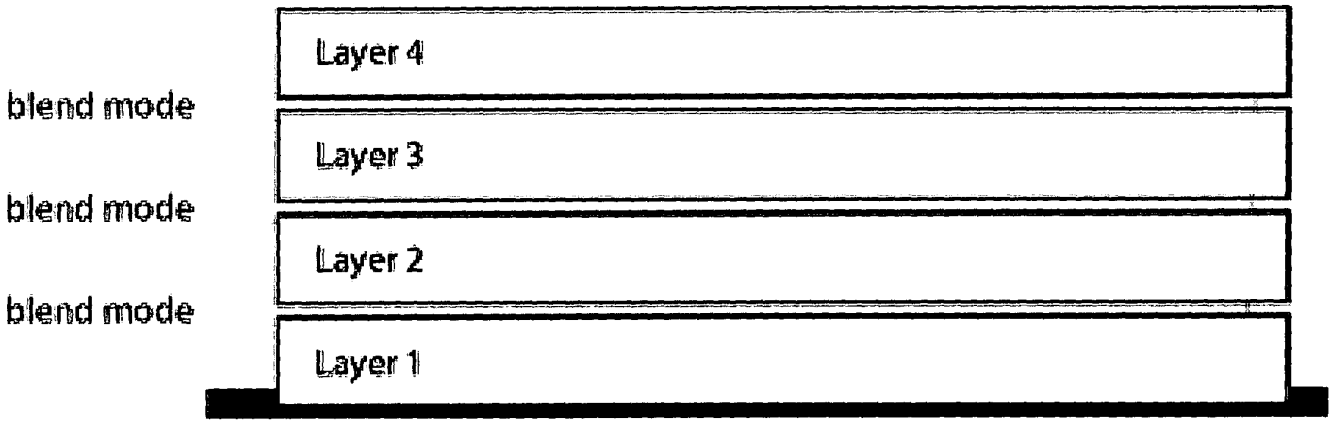

Layer 4
blend mode
Layer 3
blend mode
Layer 2
blend mode
Layer 1

FIG. 11

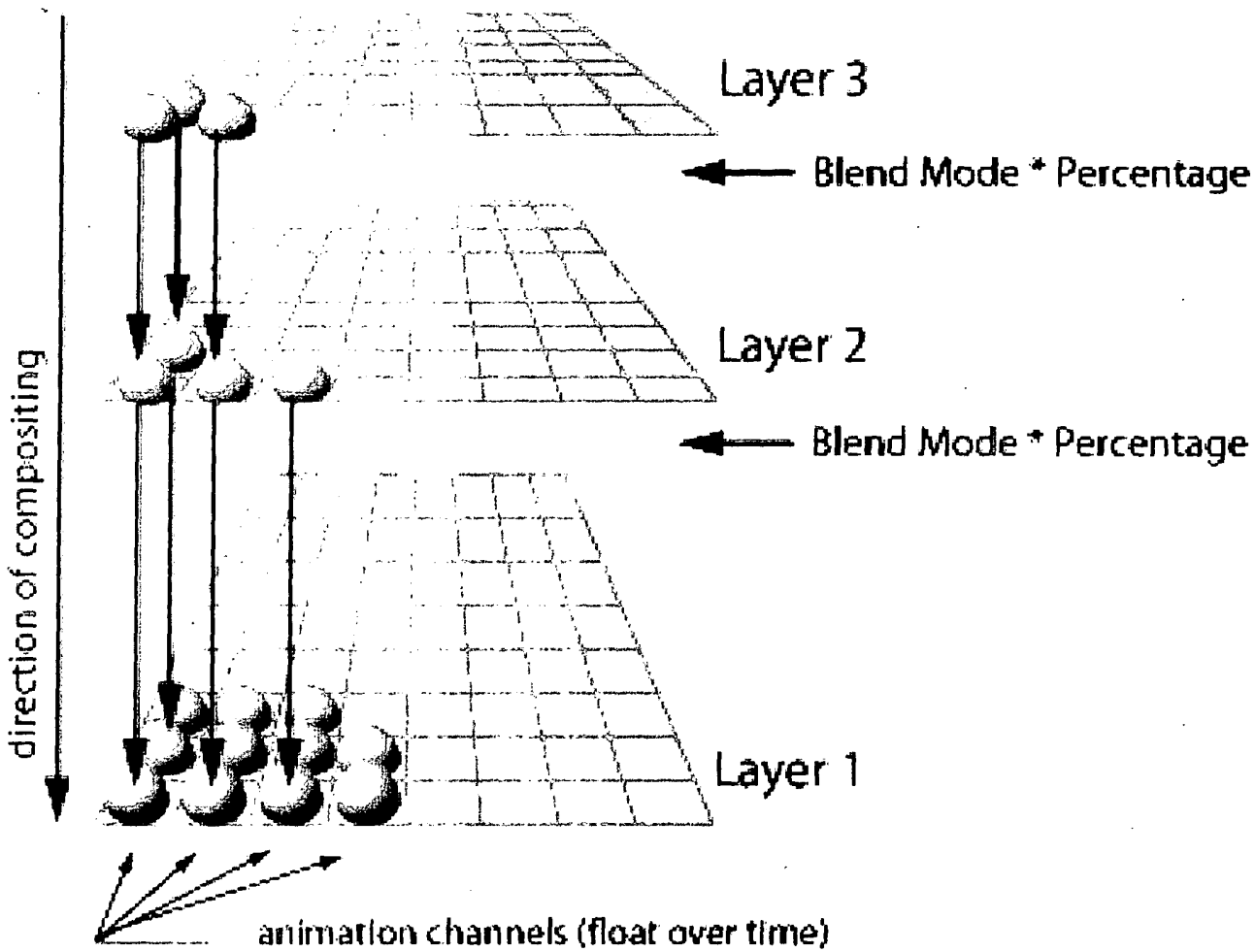

Layer 3
Blend Mode * Percentage
Layer 2
Blend Mode * Percentage
Layer 1
direction of compositing
animation channels (float over time)

FIG. 12

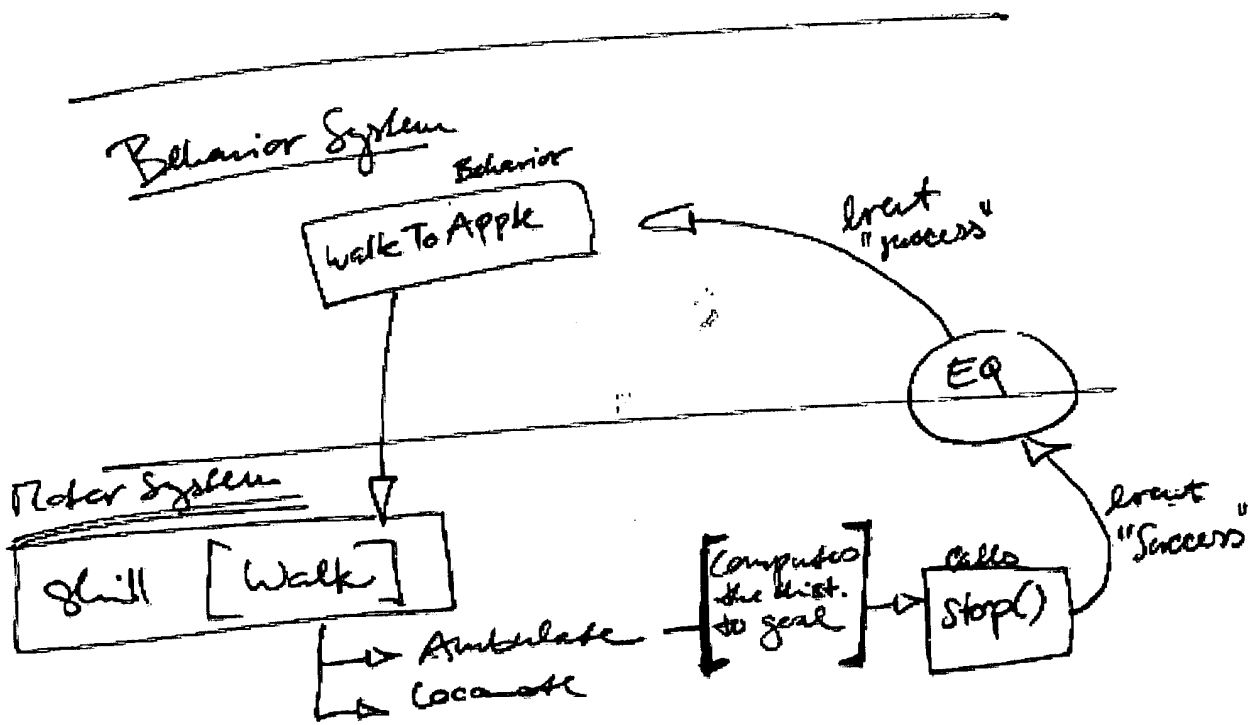

Behavior System
Behavior
Walk To Apple
Emit "success"
EQ
Motor System
Skill
[Walk]
Ambulate
Locomote
[Computes the dist. to goal]
Calls
Stop()
Emit "Success"

FIG. 13

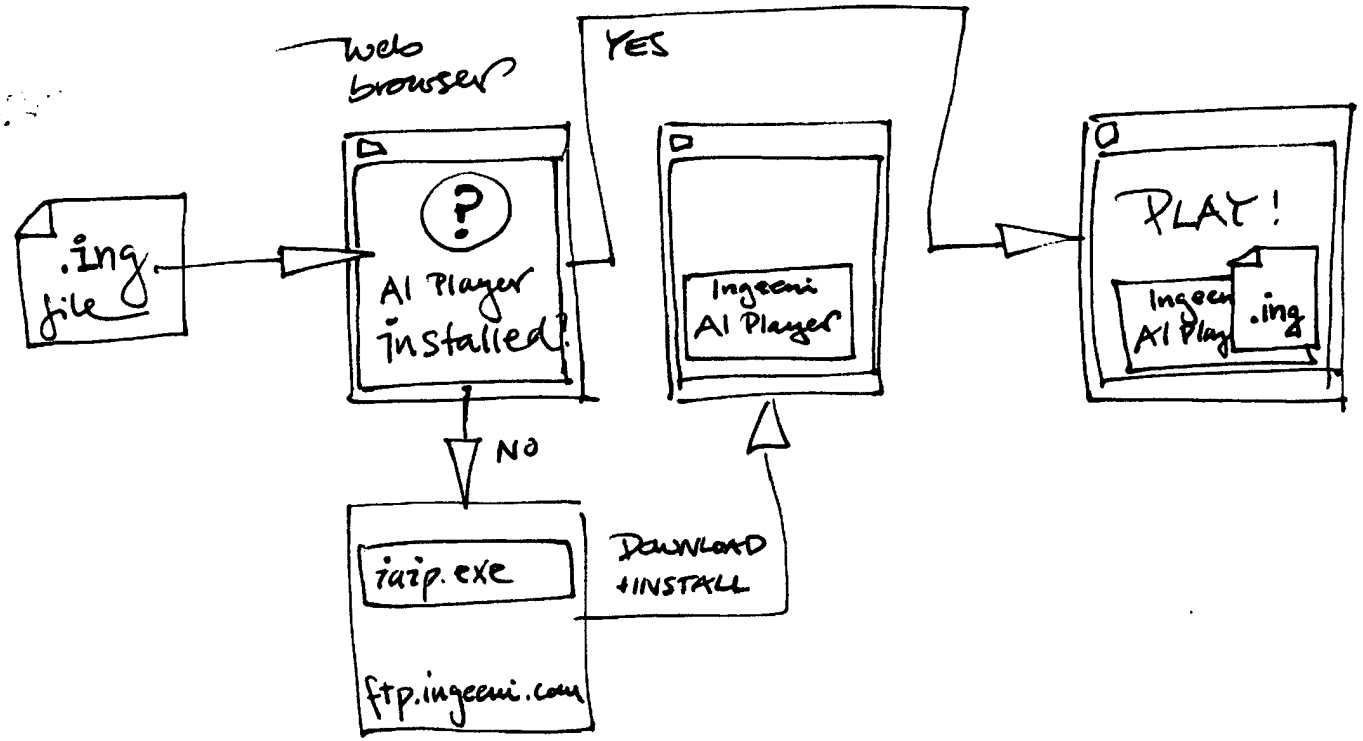

web browser
YES
.ing file
?
AI Player installed?
Ingeeni AI Player
PLAY!
Ingeeni AI Player
.ing
NO
iaip.exe
DOWNLOAD + INSTALL
ftp.ingeeni.com

FIG. 14

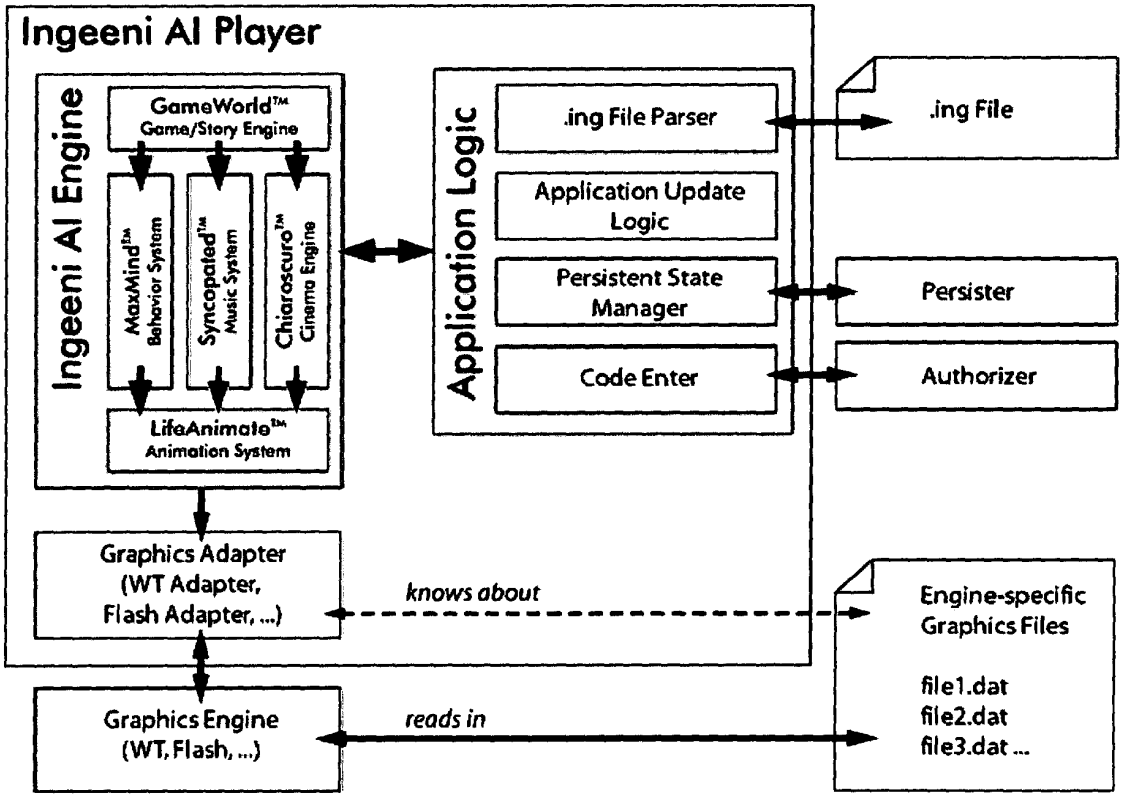

Ingeeni AI Player
Ingeeni AI Engine
GameWorld™
Game/Story Engine
MaxMind™
Behavior System
Syncopated™
Music System
Chiaroscuro™
Cinema Engine
LifeAnimate™
Animation System
Application Logic
.ing File Parser
Application Update Logic
Persistent State Manager
Code Enter
.ing File
Persister
Authorizer
Graphics Adapter
(WT Adapter,
Flash Adapter, ...)
knows about
Engine-specific
Graphics Files
file1.dat
file2.dat
file3.dat ...
Graphics Engine
(WT, Flash, ...)
reads in

FIG. 15

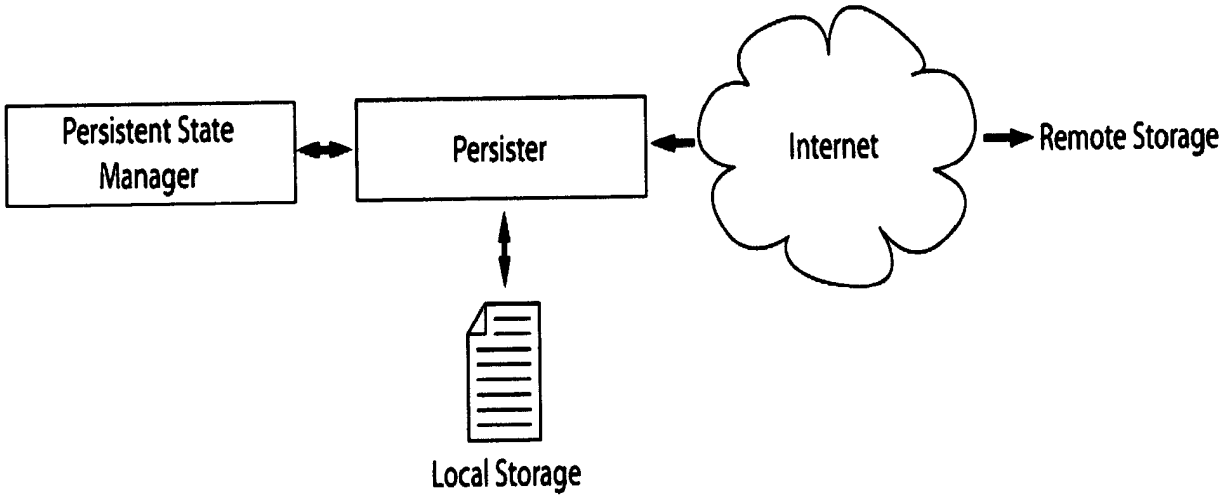

Persistent State Manager
Persister
Internet
Remote Storage
Local Storage

FIG. 16

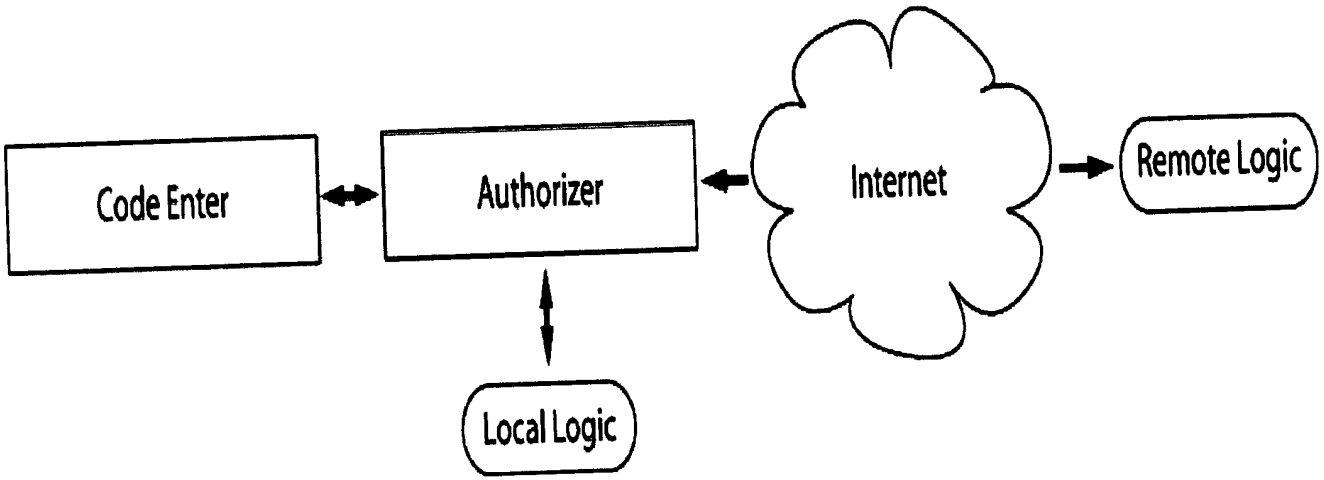


FIG. 17

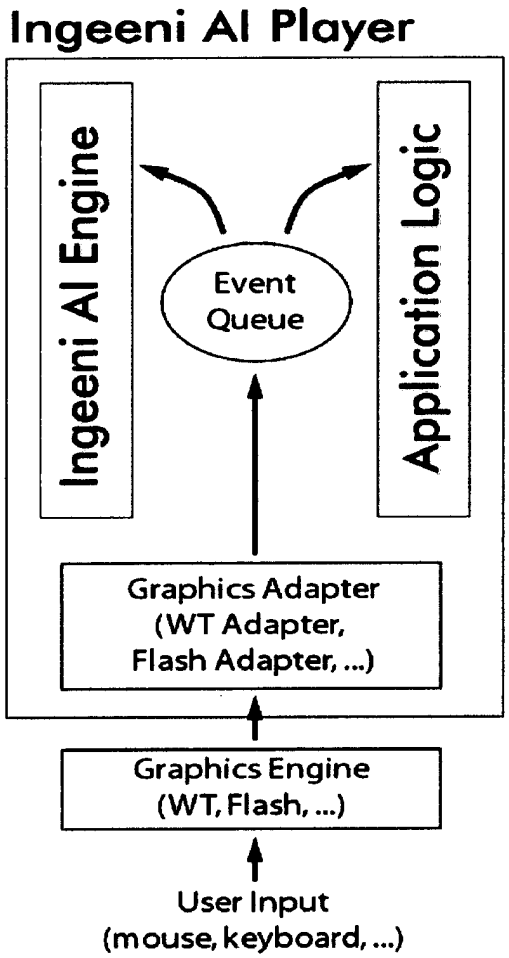

Ingeeni AI Player
Ingeeni AI Engine
Application Logic
Event Queue
Graphics Adapter (WT Adapter, Flash Adapter, ...)
Graphics Engine (WT, Flash, ...)
User Input (mouse, keyboard, ...)

FIG. 18

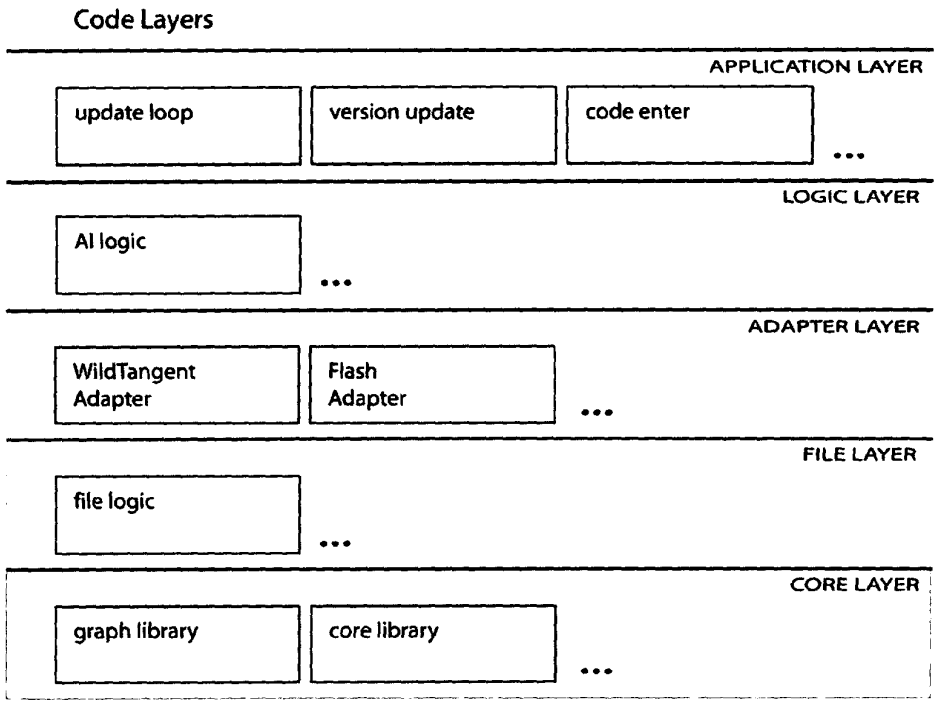

Code Layers
APPLICATION LAYER
update loop
version update
code enter
...
LOGIC LAYER
AI logic
...
ADAPTER LAYER
WildTangent Adapter
Flash Adapter
...
FILE LAYER
file logic
...
CORE LAYER
graph library
core library
...

FIG. 19

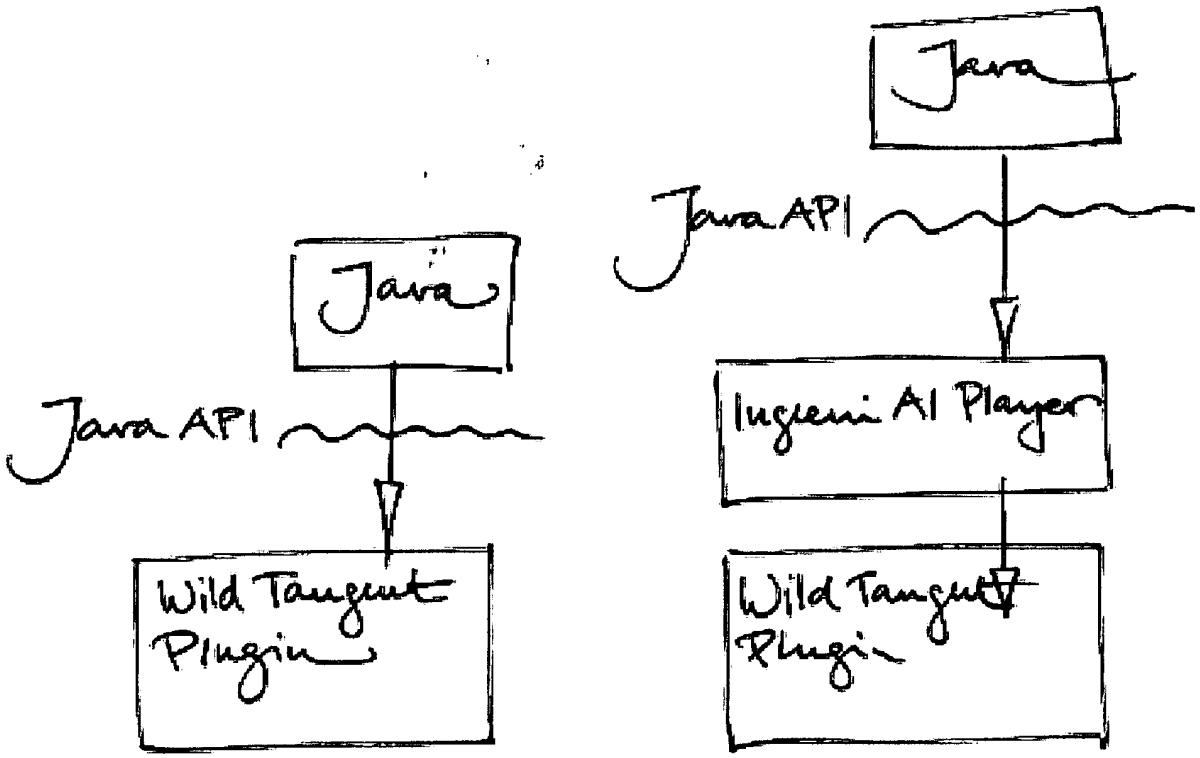

Java
Java API
Wild Tangent Plugin
Java
Java API
Ingeni AI Player
Wild Tangent Plugin

FIG. 20

Windows	**OS X**
Internet Explorer Netscape	Internet Explorer Netscape Safari

FIG. 21

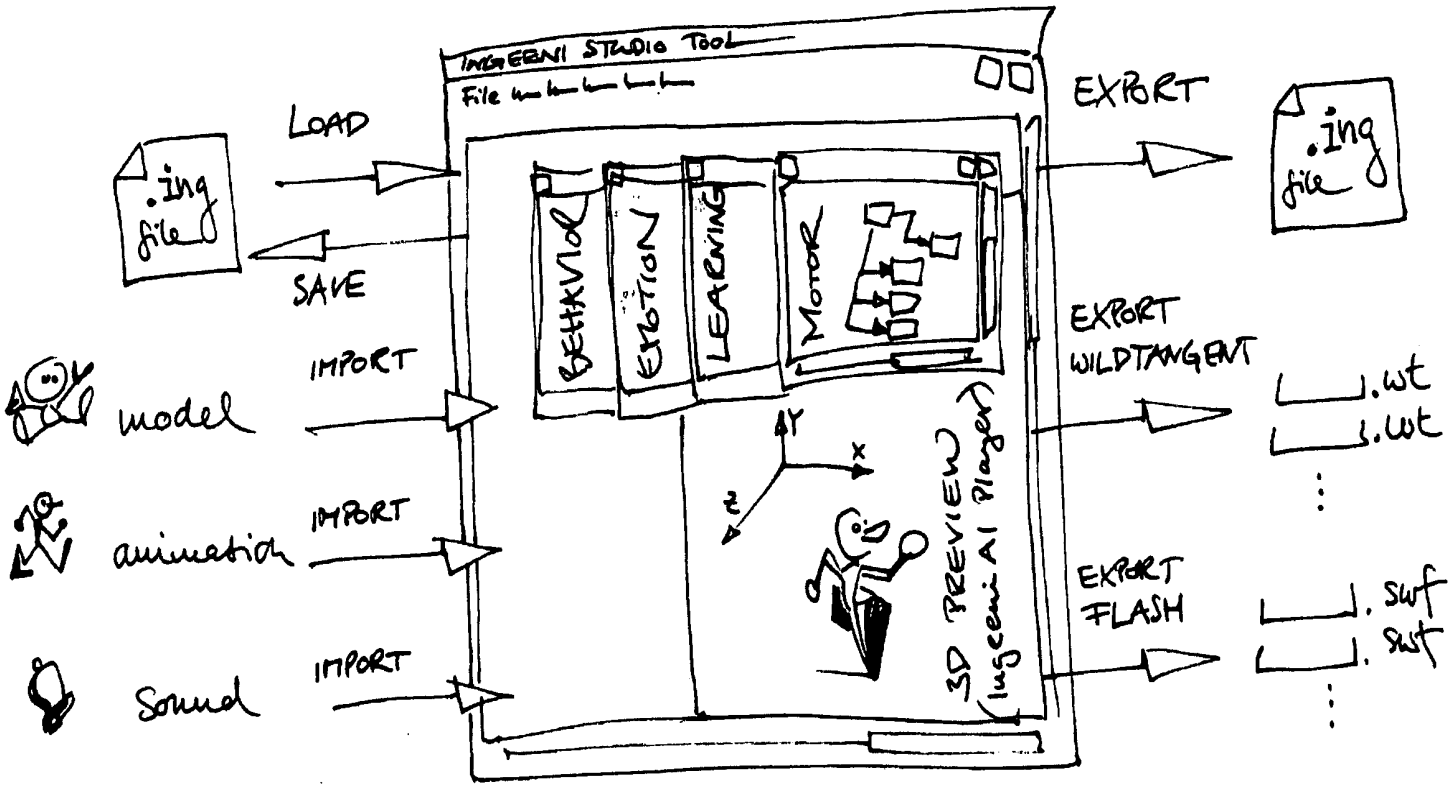

INGENI STUDIO TOOL
File
LOAD
SAVE
.ing file
IMPORT
model
IMPORT
animation
IMPORT
Sound
BEHAVIOR
EMOTION
LEARNING
MOTOR
3D PREVIEW (Ingeni AI Player)
EXPORT
.ing file
EXPORT WILDTANGENT
.wt
.wt
EXPORT FLASH
.swf
.swf

FIG. 22

Suffix	*Name*	*Owner/3rd Party*	*Purpose*
.dxf	DXF	AutoDesk	3D models
.obj	AW Object	Alias|Wavefront	3D models
.mb	Maya Binary	Alias|Wavefront	3D models, animations
.ma	Maya ASCII	Alias|Wavefront	3D models, animations
.max	3D Studio MAX	Discreet	3D models, animations
.wav	Wave	-	Sound/music
.mid	MIDI	-	Sound/music
.jpg	JPEG	-	Image

FIG. 23

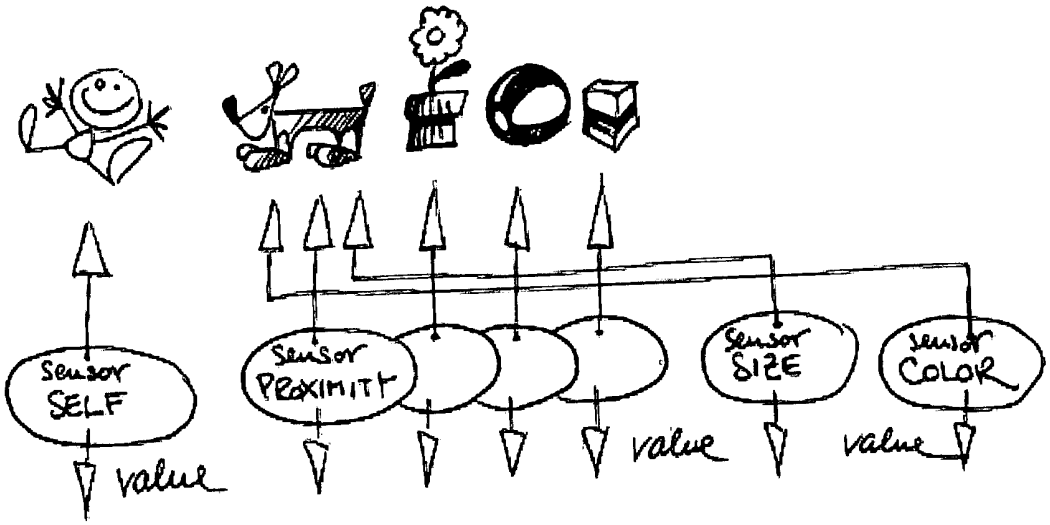

Sensor
SELF
value
Sensor
PROXIMITY
value
Sensor
SIZE
value
Sensor
COLOR

FIG. 24

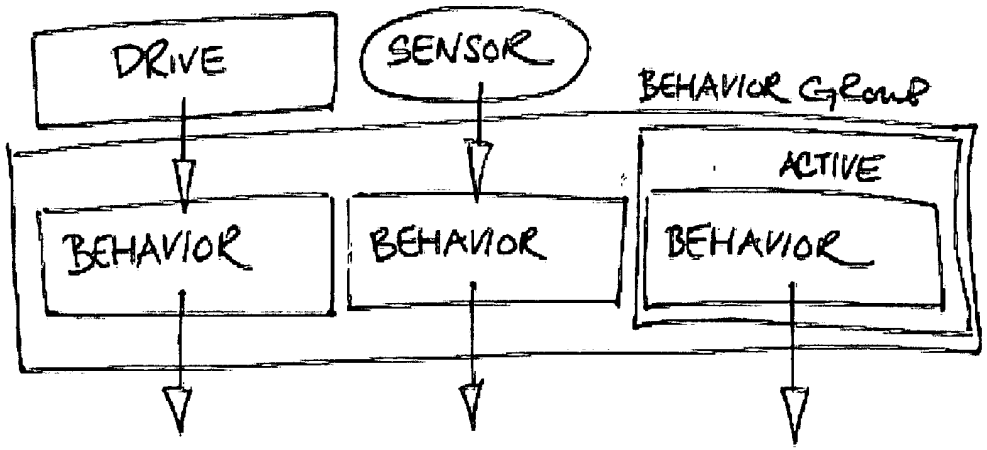

DRIVE
SENSOR
BEHAVIOR GROUP
ACTIVE
BEHAVIOR
BEHAVIOR
BEHAVIOR

FIG. 25

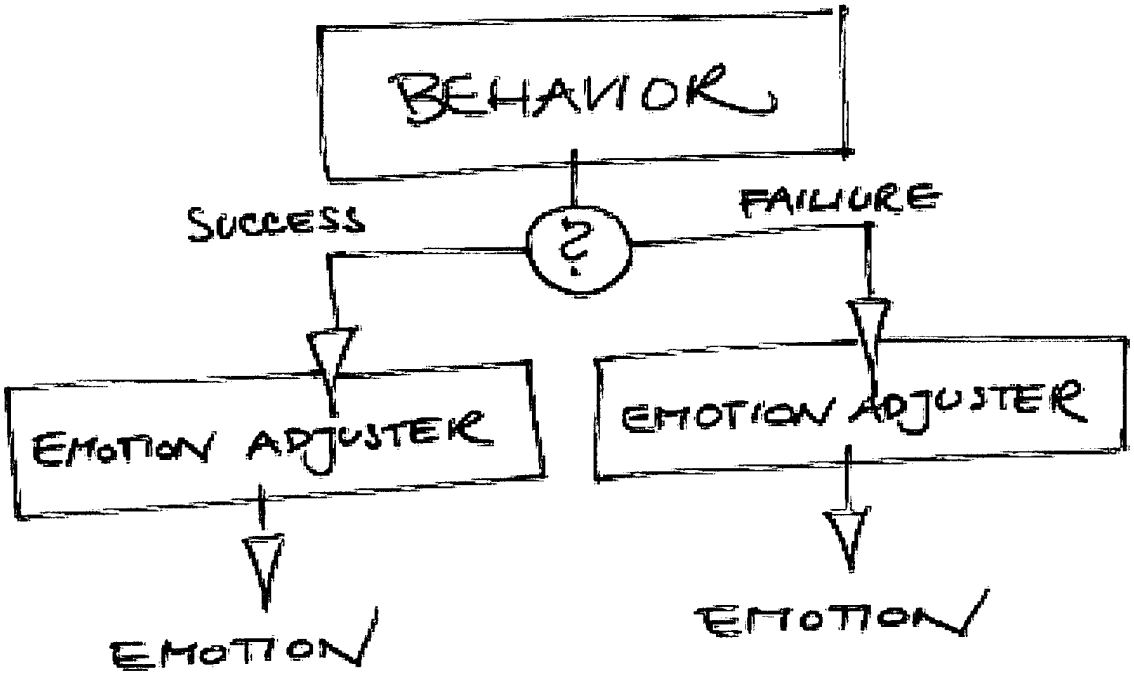

BEHAVIOR
SUCCESS
?
FAILURE
EMOTION ADJUSTER
EMOTION ADJUSTER
EMOTION
EMOTION

FIG. 26

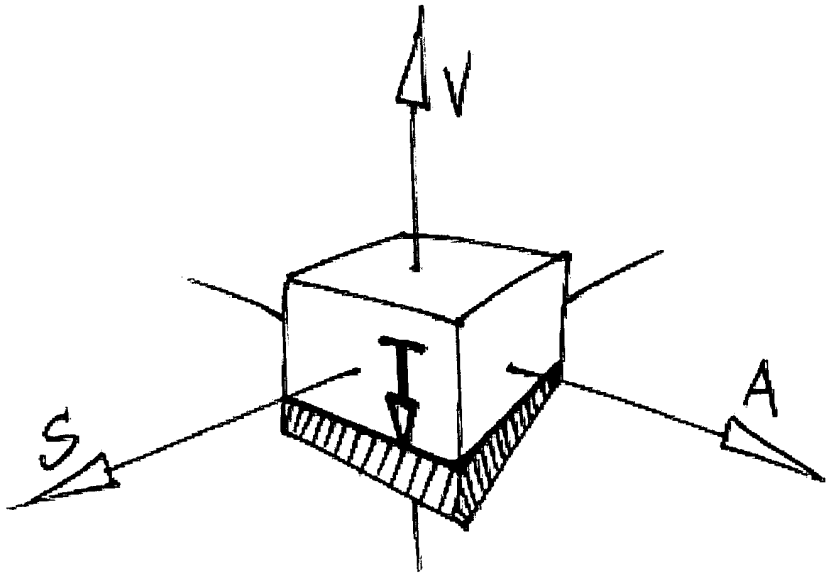


FIG. 27

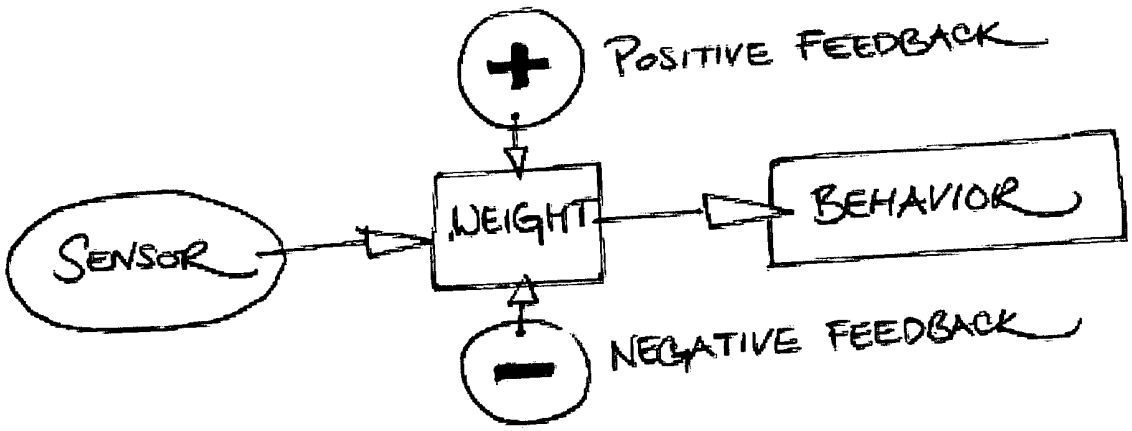

POSITIVE FEEDBACK
SENSOR
WEIGHT
BEHAVIOR
NEGATIVE FEEDBACK

FIG. 28

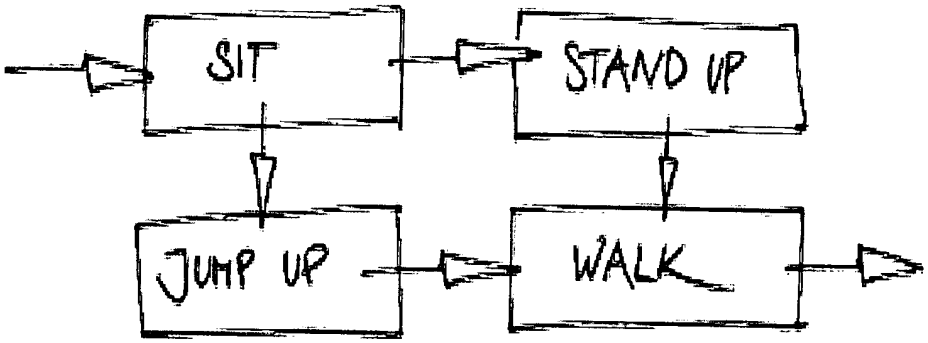


FIG. 29

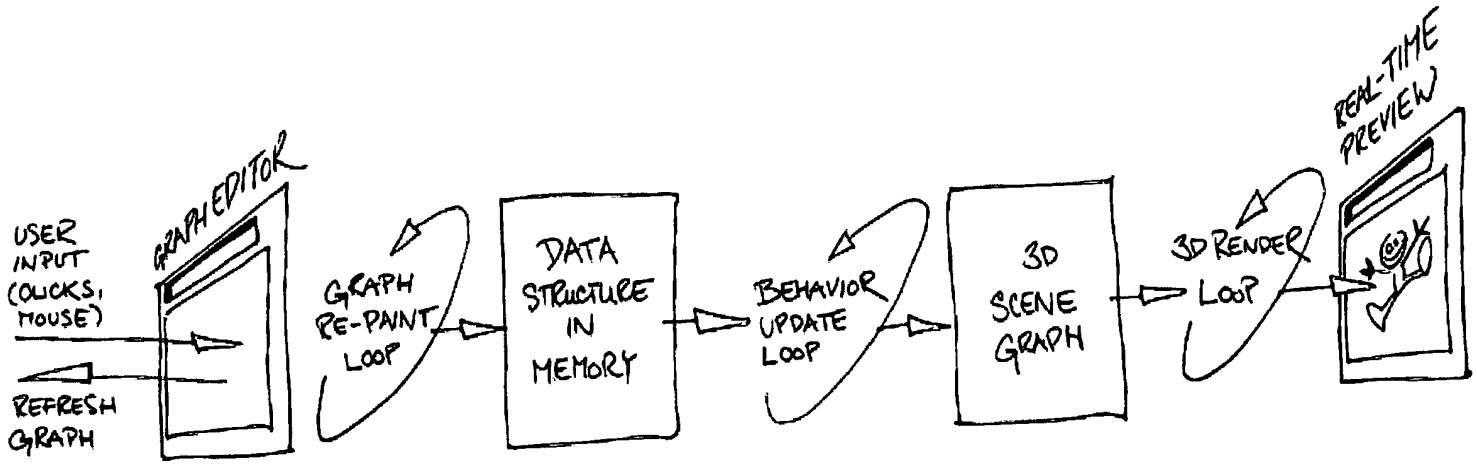

USER INPUT (CLICKS, MOUSE)
REFRESH GRAPH
GRAPH EDITOR
GRAPH RE-PAINT LOOP
DATA STRUCTURE IN MEMORY
BEHAVIOR UPDATE LOOP
3D SCENE GRAPH
3D RENDER LOOP
REAL-TIME PREVIEW

FIG. 30

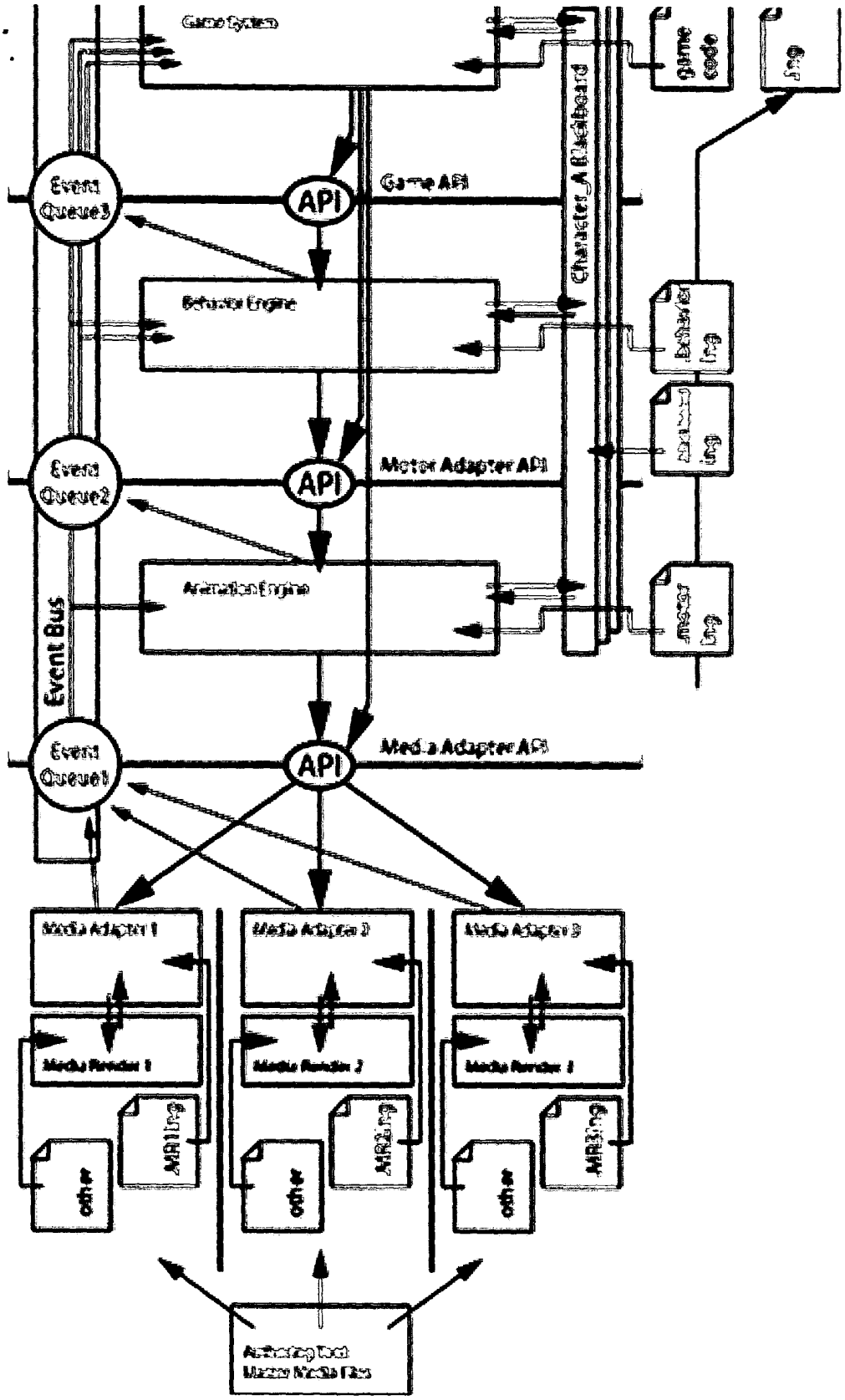

Event Queue3
API
Event Queue2
API
Event Queue1
API
Event Bus
other
other
other

FIG. 31

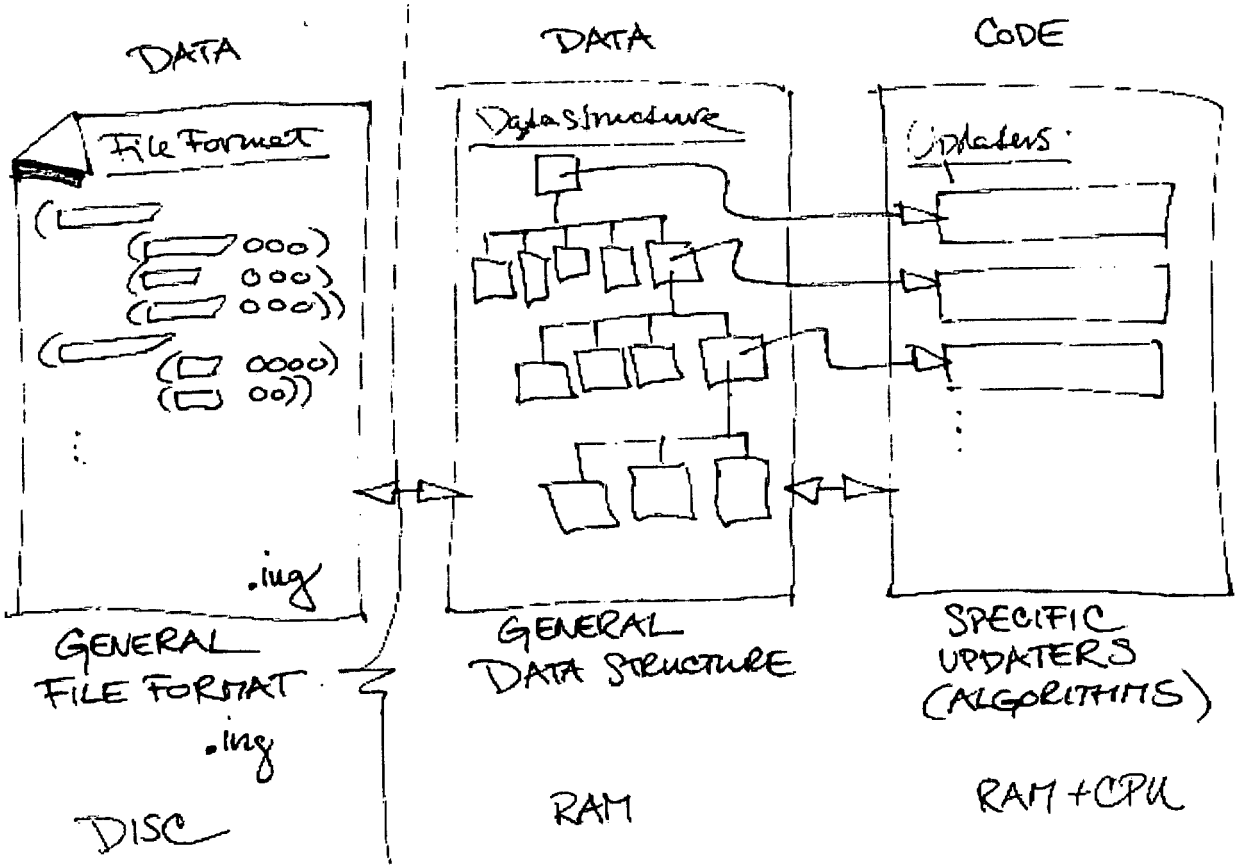

DATA
DATA
CODE
File Format
Data Structure
Updaters
.img
GENERAL
FILE FORMAT
.img
DISC
GENERAL
DATA STRUCTURE
RAM
SPECIFIC
UPDATERS
(ALGORITHMS)
RAM + CPU

FIG. 32

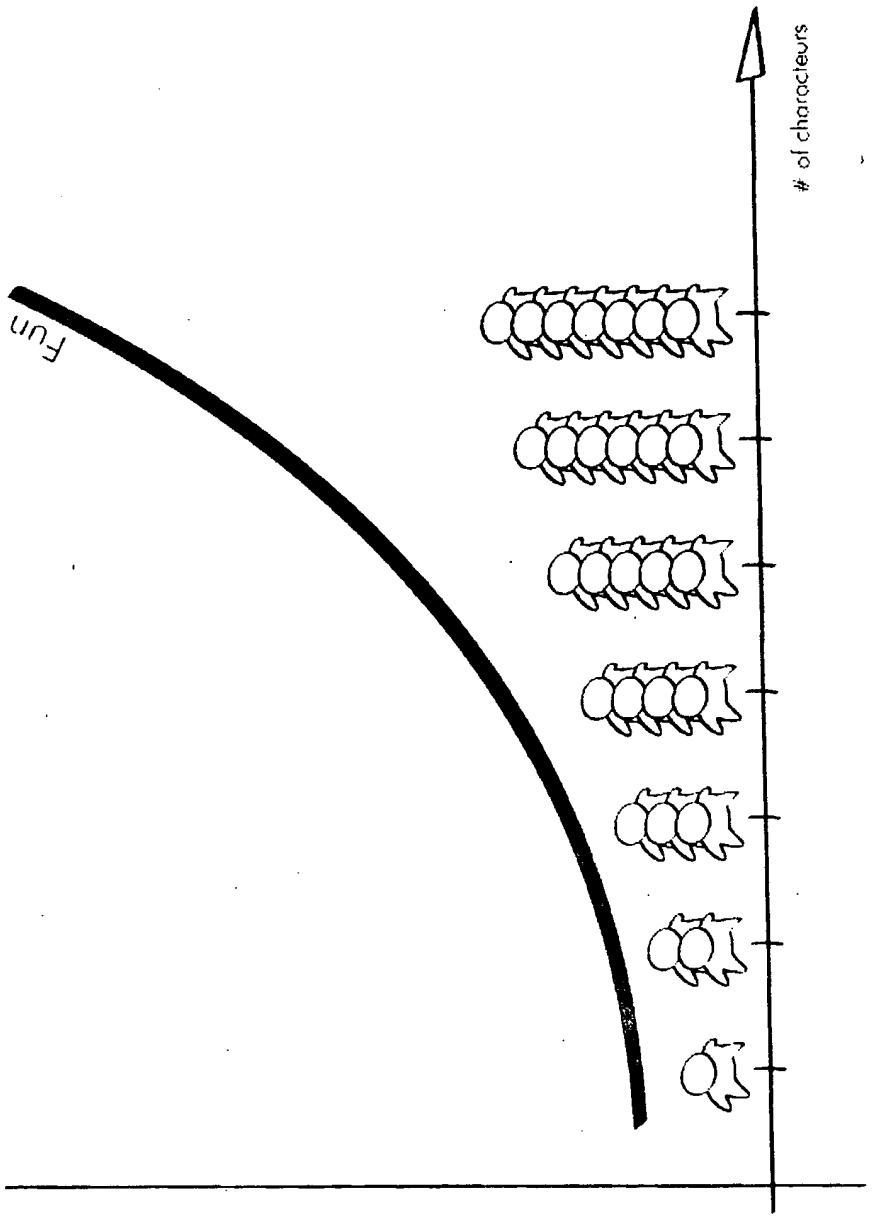


FIG. 33

	Positive	Negative
Temperament	User interacting in a happy, positive way with the character	User encourages sad or bored behavior in the character
Pervasiveness	User's positive interaction with character continues throughout virtual worlds	User's negative interaction with character continues throughout virtual worlds
Permanence	The consistency with which the user interacts in a positive way	The consistency with which the user interacts in a negative way
Aid	User increases character's level of happiness	User allows and does not stop negative influence of antagonist
Nourishment	User feeds a healthy, good, often "branded" food to the character	User feeds a sickly food to the character

FIG. 34

Num	Category	Code Module / Library	Functionality	Version
1	Engine	Story Engine	Imposes a top-level story on the open-ended interactions	V2.0
2	Engine	Behavior Engine	Implements Sensor, Behavior, Emotion and Learning subsystems	V1.0
3	Engine	Music Engine	Plays out emotionally-colored music in response to the user's and characters' actions	V1.0
4	Engine	Cinema Engine	Controls the autonomous camera and lighting of the scene	V1.0
5	Engine	Animation Engine	Interprets the behavior system commands based on the character's motor skills	V1.0
6	Data	AI Graph Data Structure	Holds all behavior, emotion, motor and learning-related data for all characters, world and camera	V1.0
7	Data	*.ing File Specification*	*written document (not code)*	V1.0
8	Data	.ing Parser	read/write functionality for .ing file format	V1.0
9	Player	Application Main	Conains the Player main loop	V1.0
10	Player	Application Update	Takes care of Versioning of the Player itiest; looks for availble updates and manages them	V1.0
11	Player	Persistent State Manager	Keeps track of the state of the scene as changed by the user; talks to Persister	V1.0
12	Player	Code Enter	Allows the user to enter PowerCodes; talks to Authorizer	V1.0
13	Player	Graphics Adapter WildTangent	Profides an interface between animation engine and WildTangent graphics	V1.0
14	Player	Graphics Adapter 2D	Profides an interface between animation engine and a possible 2D graphics solution	V2.0
17	Player	*Java API V1.0 Specification*	*written document (not code)*	V2.0
18	Player	Java API V1.0 Implementation	Defines an API fo accessing the Engine's functionality from Java	V2.0
15	External	Persister	A module responsible for exchange between Persistent State Manager and a storage device	V1.0
16	External	Authorizer	A module responsible for exchange between Code Enter and a code verifier of choice	V1.0
18	Tool	Application Main	Conains the Tool main loop	V2.0
19	Tool	.ing Parser	read/write functionality for .ing (redesigned)	V2.0
20	Tool	Importer WildTangent	A parser for WildTangent's 3D data files; will have to cooperate directly with the company	V2.0
21	Tool	Importer .mb	A parser for Maya proprietary data files; we'll have to cooperate directly with the company	V3.0
22	Tool	Importer .max	A parser for 3D Studio MAX proprietary data files; we'll have to cooperate directly with the company	V3.0
23	Tool	other Importers	based on the developers' requirements	V3.0+
24	Tool	Graph Libraries	General software libraries for creating, manipulating and displaying graph structures	V2.0
25	Tool	GUI Sensor	GUI for developing and editing Sensor networks	V2.0
26	Tool	GUI Behavior	GUI for developing and editing Behavior networks	V2.0
27	Tool	GUI Emotion	GUI for developing and editing Emotion networks	V2.0
28	Tool	GUI Learning	GUI for developing and editing Learning networks	V2.0
29	Tool	GUI Motor	GUI for developing and editing Motor networks	V2.0
30	Tool	3D Scene Graph	A 3D scene graph for the real-time preview	V2.0
31	Tool	3D Real-Time Graphics	A 3D real-time graphics engine; either licensed 3rd party or developed in-house	V2.0
32	Tool	Exporter WildTangent	An exporter for WildTangent's data files; will have to cooperate directly with the company	V2.0
33	Tool	Exporter 2D	An exporter for 2D graphics	V3.0+

FIG. 35

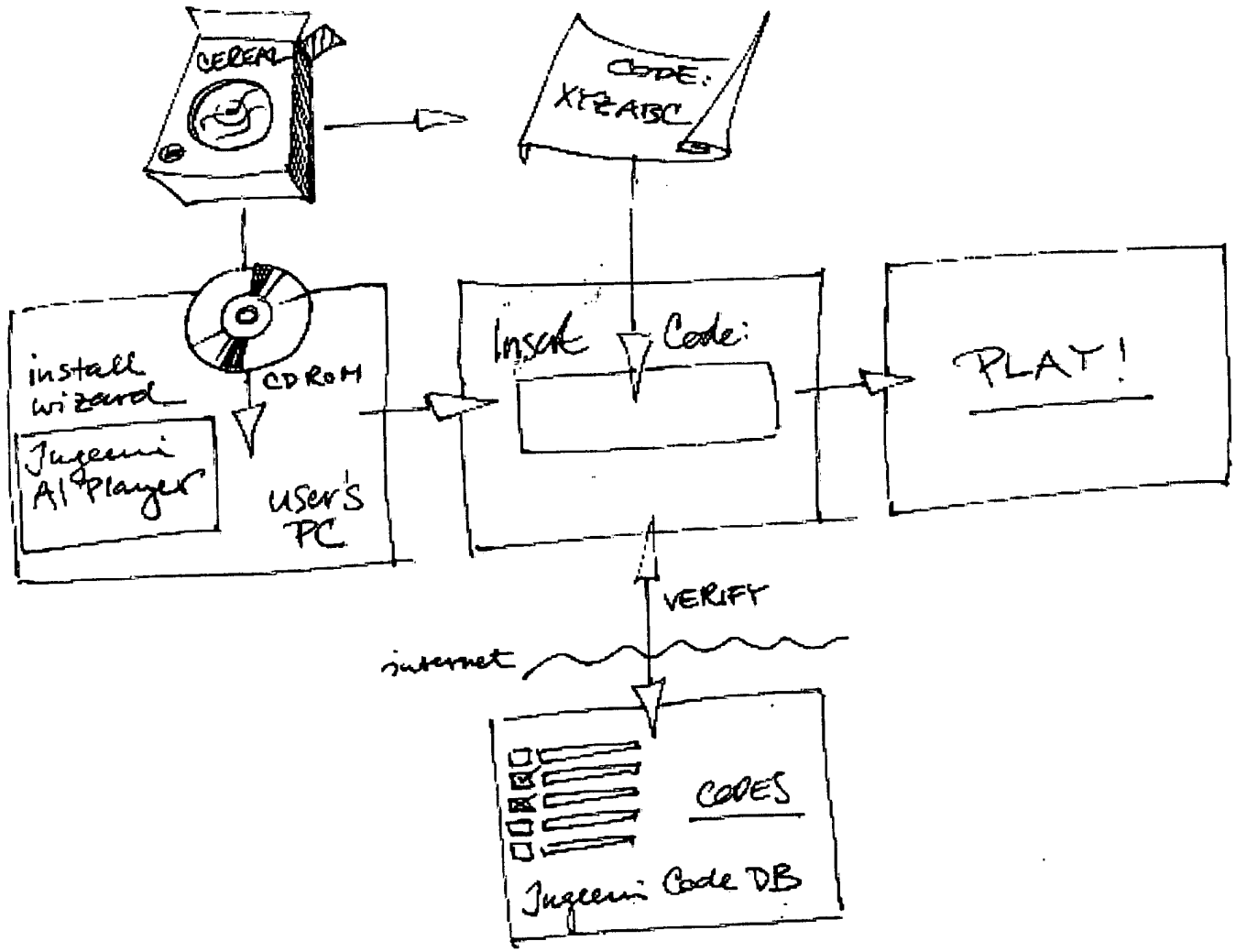

CODE:
XYZABC
install wizard
CD ROM
Jugemu AI Player
User's PC
Insert Code:
PLAY!
VERIFY
internet
CODES
Jugemu Code DB

FIG. 36

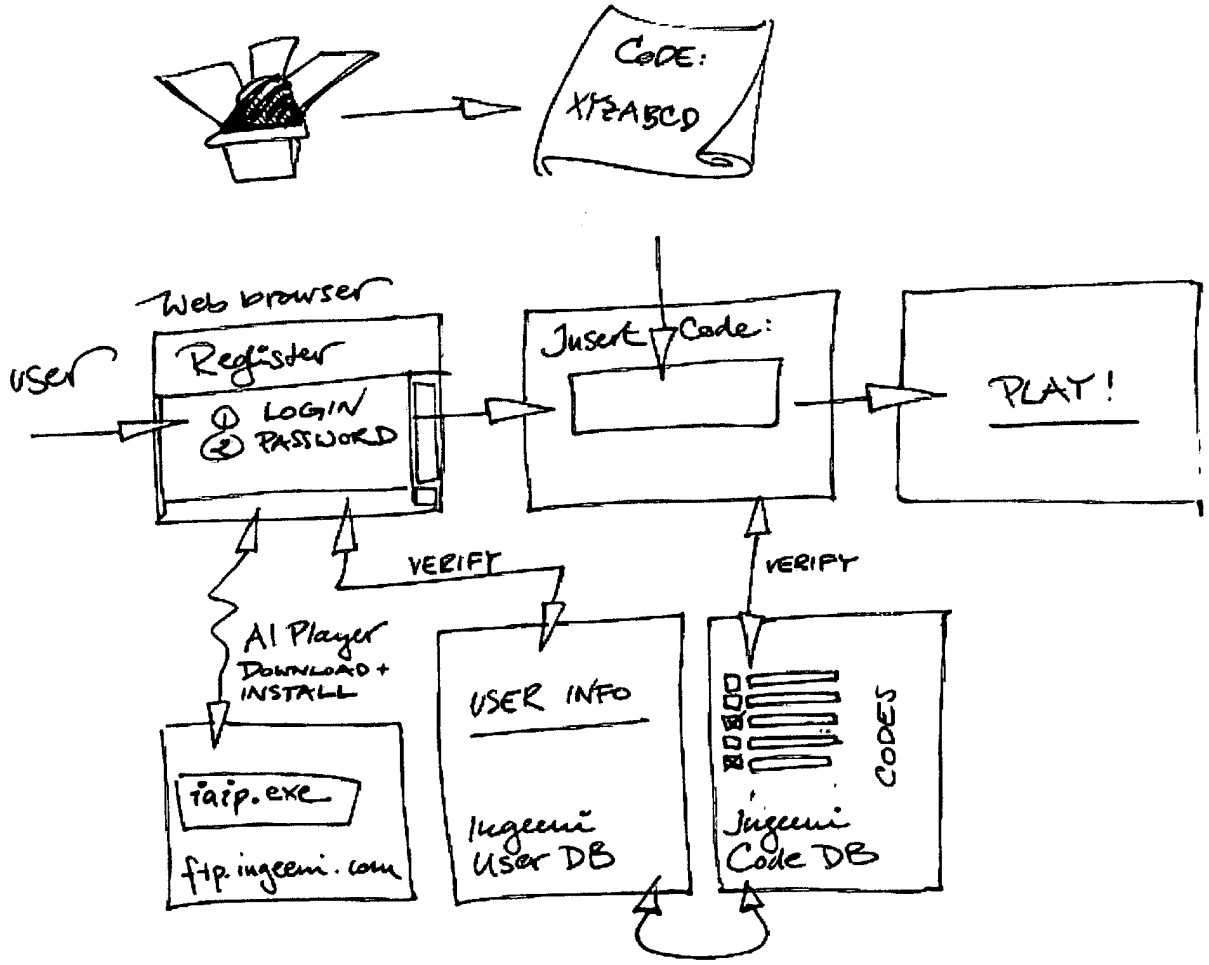

CODE:
XYZABCD
Web browser
User
Register
LOGIN
PASSWORD
Insert Code:
PLAY!
VERIFY
VERIFY
AI Player
DOWNLOAD + INSTALL
USER INFO
CODES
faip.exe
ftp.ingeeni.com
Ingeeni User DB
Ingeeni Code DB

FIG. 37

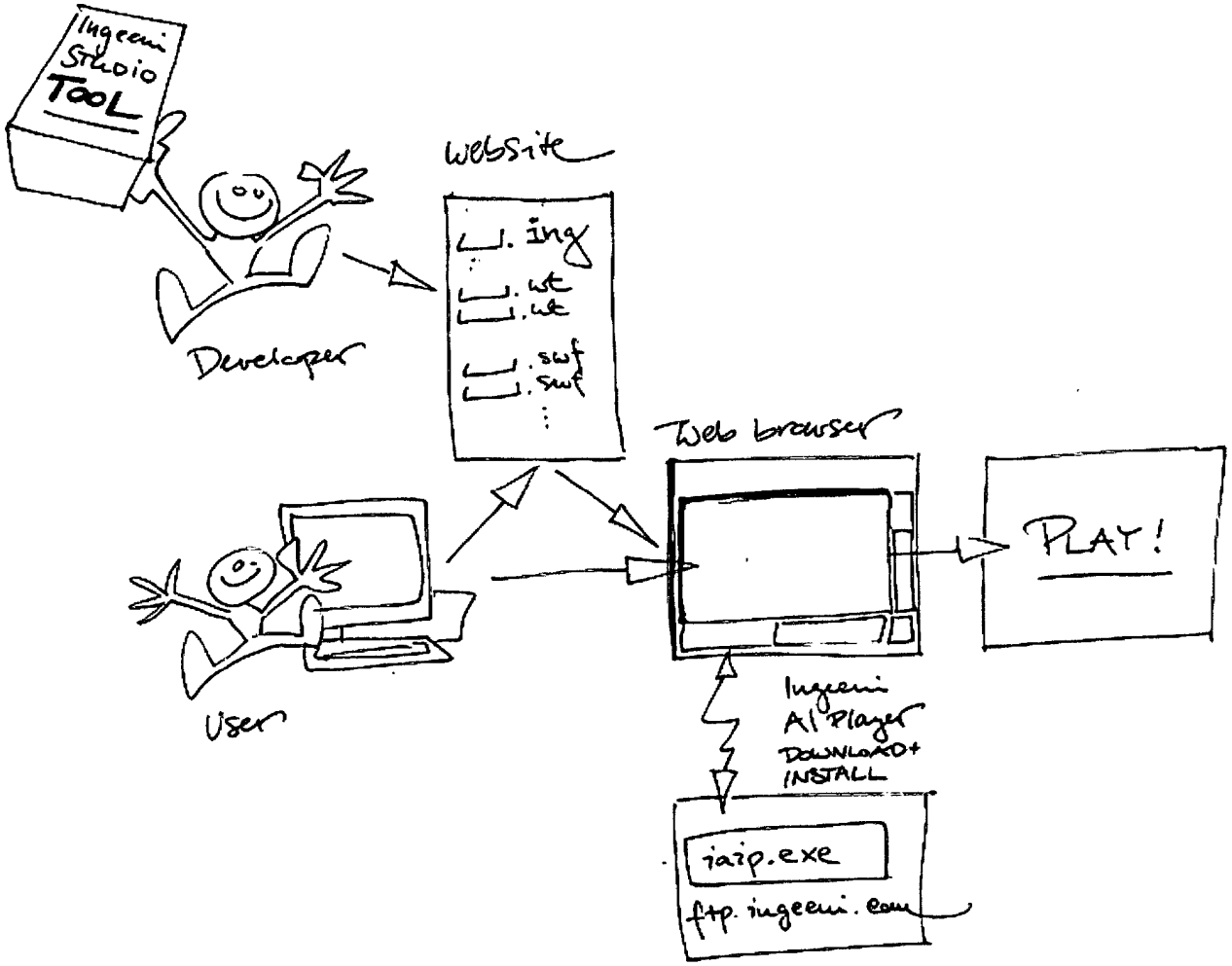
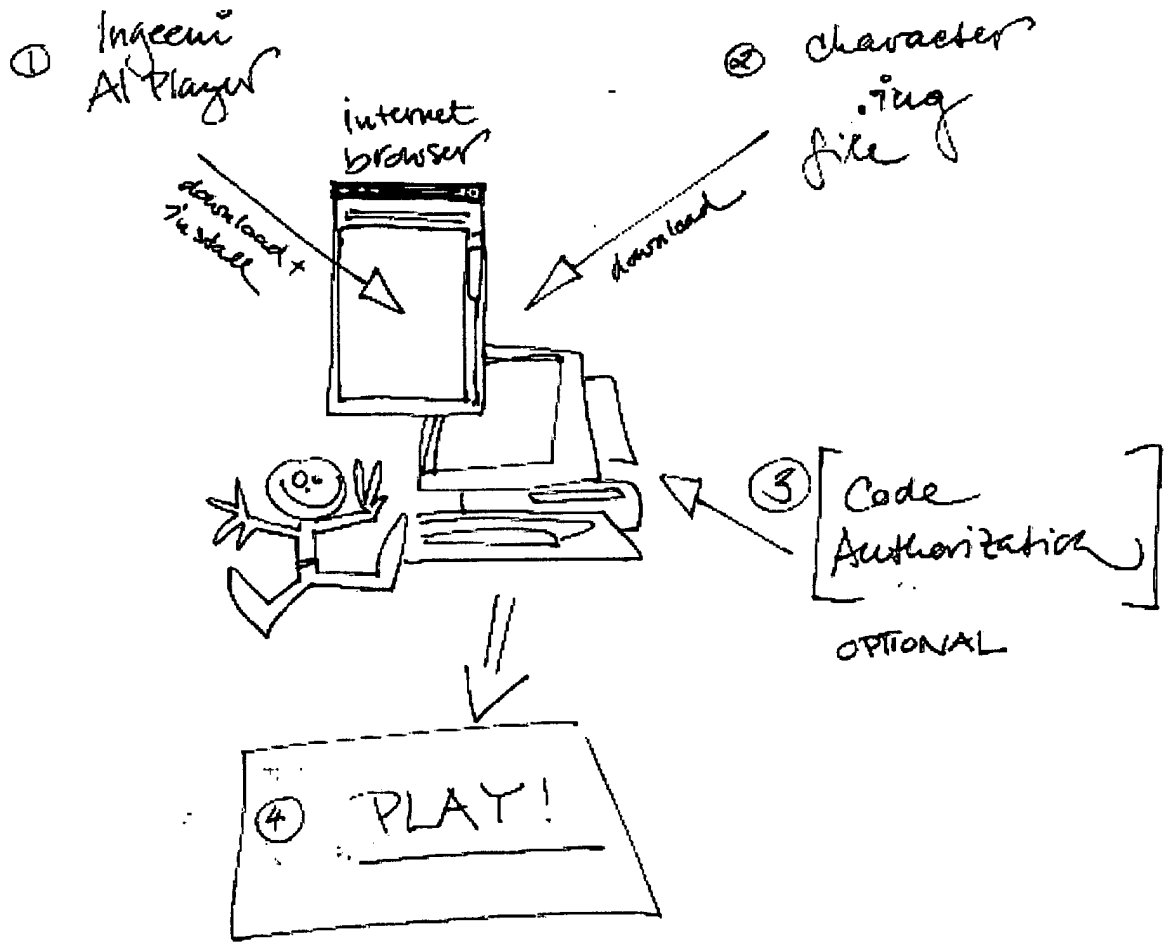

Ingeeni
Studio
Tool
Developer
website
.ing
.wt
.wt
.swf
.swf
Web browser
PLAY!
User
Ingeeni
AI Player
DOWNLOAD+
INSTALL
iaip.exe
ftp.ingeeni.com

FIG. 38



KT/INGEENI123.FIG2

FIG. 39